North Carolina Pedestrian Crash Facts
2005-2009

Prepared for

The North Carolina Department of Transportation

Division of Bicycle and Pedestrian Transportation

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Contents

General Trends

Over the past five years in North Carolina (NC), 12,419 collisions between pedestrians and motor vehicles have been reported to NC authorities. The total pedestrian collisions rose fairly steadily from 1999 to 2004, after which the trend has leveled off. There have been reported decreases in each of the past two years with crashes falling from 2560 in 2007 to 2429 in 2009, a decrease of 5% for this two-year period (Figure 1).

Most of the rise in crashes over the decade has occurred in urban areas, with most of the recent decreases coming from areas designated as rural (Figure 1). We, unfortunately, lack exposure data that might help to explain the drop in reported crashes, but increasing urbanization of the State could contribute to the trend of reduced crashes designated as being in rural (unincorporated) areas.

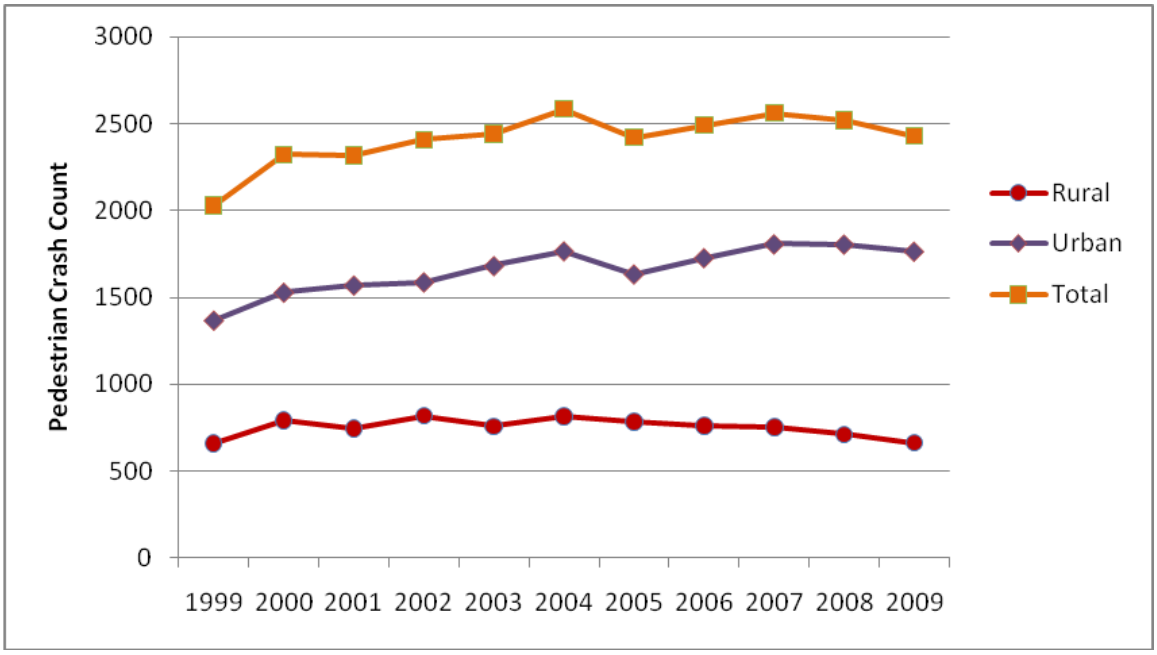

Figure 1. NC Pedestrian crash trends, 1999 – 2009.

The amount of walking would have the greatest impact on collision rates involving pedestrians, but we lack data on amounts of walking in NC to compare between years. Another risk factor would be motor vehicle traffic volumes. Annual NC Vehicle Miles Traveled was estimated to increase between 2008 and 2009, especially in the larger urban areas where most pedestrian crashes occur, so a reduction in driving would not seem to explain the recent drop in pedestrian crashes.[1] There were also some concerns by State officials that the reporting of crashes for 2009 was not as complete compared to prior years, so a combination of amounts of walking, reporting changes, and other factors – possibly including safety improvements, but also

[1] Statewide, annual Vehicle Miles Traveled increased by 1.1% from 101.5 billion, to 102.6 billion from 2008 to 2009.

including chance – could explain the decrease in reported collisions. Therefore, caution is advised in interpreting the two-year trend, but hopefully this recent downturn in pedestrian crashes will continue, supplemented by a positive trend in amounts of walking.

Nearly two-thirds of pedestrian crashes, 60% of the collisions from 2005 to 2009, occurred within the counties in the Piedmont region with the numbers trending upwards until 2007, about 30% in the Coastal Plain counties, and the remaining 11% in the Mountain region of the State. (Crash trends by region shown in Figure 2.)

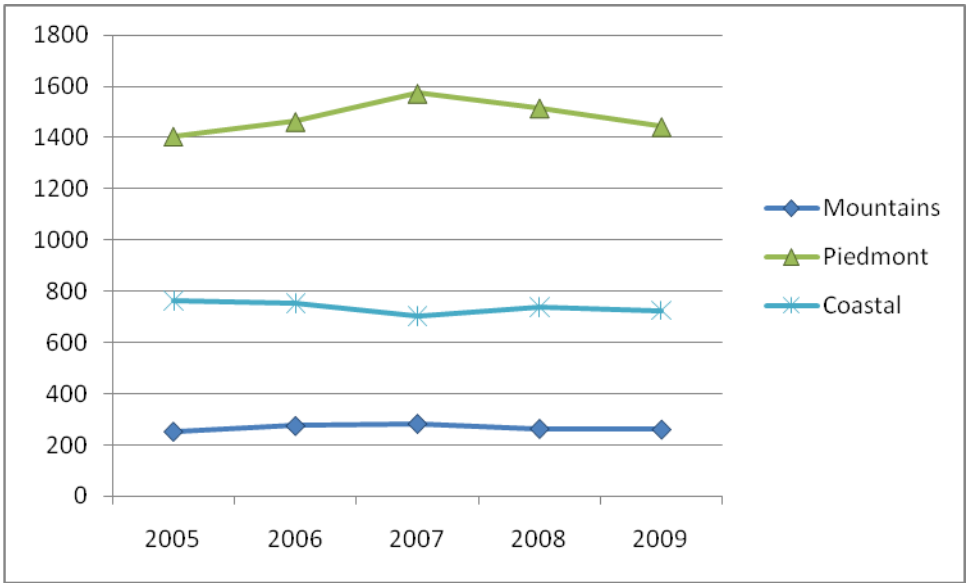

Figure 2. Five-year pedestrian crash trends by region of NC.

On average, 168 pedestrians were killed and another 200 were reported seriously injured in each of the past five years with many more suffering evident or possible injuries (Figure 3).* There were 153 fatal pedestrian crashes in 2009, a drop of 7% from the 165 reported in 2008.

* The number of pedestrians killed and injured reflects only the "first" pedestrian reported on in the crash. A few crashes each year involve multiple pedestrians, and may include multiple injuries and fatalities. For example, in 2007, one collision resulted in 8 pedestrian fatalities. These circumstances are relatively rare, however, and in order not to over-represent the number of crashes, the data contained in this report account for only the first pedestrian, who was also verified as a pedestrian during review of the crash reports.

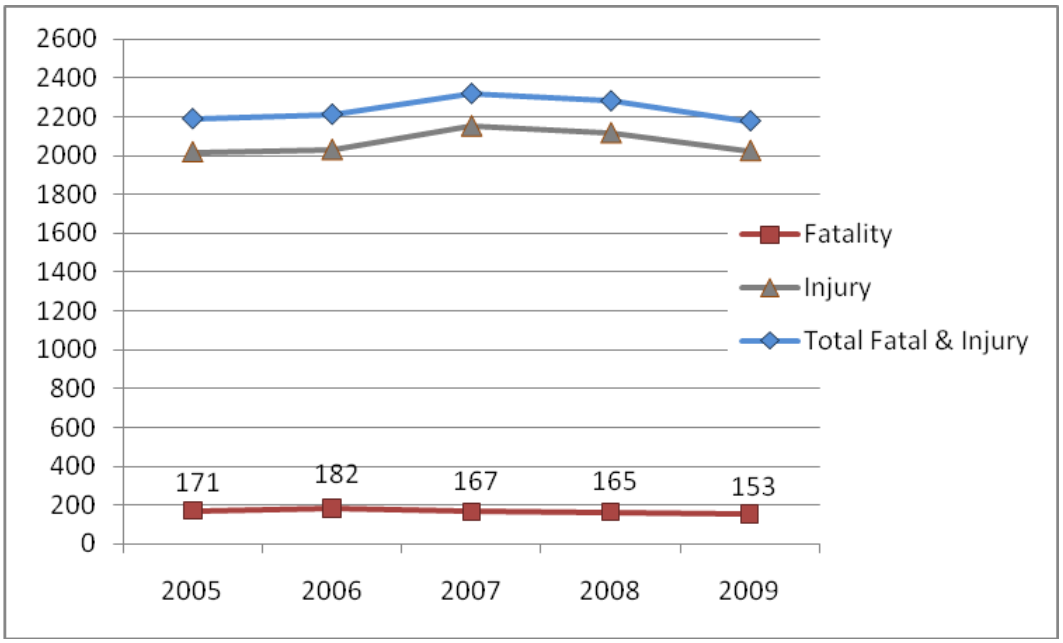

Figure 3. Five-year pedestrian crash injury level trends. (Counts are of crashes, with injury level of the first pedestrian in each crash. The totals reflected do not include crashes where no injuries were reported or injury level was unknown.)

The remainder of this report summarizes the location types, person, time, environmental and roadway characteristics for the 12,419 pedestrian-motor vehicle crashes that were reported Statewide for 2005 - 2009. This information, and similar information developed for local communities, can aid in the targeting of resources and countermeasures to address pedestrian safety problems. Descriptions of the types of crashes, or events leading up to the crash, are provided in the companion Pedestrian Crash Types Summary report.

These data may include non-injury collisions with low property damage which were not officially "reportable" but had been reported to the State Division of Motor Vehicles. Non-reportable collisions would not be included in other State crash statistics. As with all crash data, the reported numbers in the crash characteristics that follow undoubtedly reflect some error, including errors or gaps in reporting, as well as errors made during data entry and coding.

Where NC Pedestrian Crashes Occur

As shown in figure 1, more than two-thirds (70%) of NC pedestrian collisions over the past five years occurred in municipal (urban) limits, with 30% in unincorporated areas of the State (designated as rural, although some of these areas could be built up). These data are coded based on whether the crash was indicated as occurring within municipal boundaries (urban), or not (rural), and may not reflect area land use.

When looking at development density, as coded by the reporting enforcement agencies, the picture becomes even more weighted toward pedestrian crashes occurring in at least somewhat developed areas, with 85% of crashes occurring in areas that are at least 30 percent developed and only 15% indicated to occur in areas that are less than 30% developed (Table 1). There has been an increasing trend in urban area crashes (here defined as greater than 70 percent developed) up until 2008.

The areas that are between 30 and 70% developed may represent areas in transition, where infrastructure is often still more rural in nature and traffic speeds remain high, while traffic volumes and roadway complexity are increasing.

Table 1. NC pedestrian-motor vehicle crashes by crash area development extent.

Locality	2005	2006	2007	2008	2009	Total
Rural (<30% Developed)	372	369	405	354	341	1841
	15.4[1]	14.8	15.8	14.1	14	14.8
Mixed (30% To 70% Developed)	391	385	364	353	349	1842
	16.2	15.5	14.2	14	14.4	14.8
Urban (>70% Developed)	1658	1736	1791	1812	1739	8736
	68.5	69.7	70	71.9	71.6	70.3
Total	2421	2490	2560	2519	2429	12419
	19.5[2]	20	20.6	20.3	19.6	100

[1] Row percent of column total
[2] Column percent of row total

Reflecting the information on development extent, 49% of pedestrian crashes, on average, occurred in areas indicated as commercial districts, 36% in residential areas (together 85%), 11% in areas designated as farms, woods, or pasture, and very small percentages in institutional (3.3%) and industrial areas (0.5%) (Table 2).

Table 2. NC pedestrian-motor vehicle crashes by area development type.

Development Type	2005	2006	2007	2008	2009	Total
Farms, Woods, Pastures	295	272	308	260	262	1397
	12.2[1]	10.9	12	10.3	10.8	11.2
Residential	885	896	911	913	843	4448
	36.6	36	35.6	36.2	34.7	35.8
Commercial	1159	1222	1258	1247	1215	6101
	47.9	49.1	49.1	49.5	50	49.1
Institutional	69	87	71	91	96	414
	2.9	3.5	2.8	3.6	4	3.3
Industrial	13	13	12	8	13	59
	0.5	0.5	0.5	0.3	0.5	0.5
Total	2421	2490	2560	2519	2429	12419
	19.5[2]	20	20.6	20.3	19.6	100

[1] Row percent of column total
[2] Column percent of row total

Using 2008 population estimates as a rate denominator, the yearly pedestrian crash rate averages 3.7 per 10,000 population across all urban areas of the State, and 1.4 per 10,000 population in un-incorporated (more rural) areas for the most recent five-year time period.[2] The difference between rural and urban crash rates likely reflects greater concentration of destinations in urban areas providing greater opportunities for walking and utilitarian trips than in rural areas of the state, but we do not have data to verify this assumption.

The ten counties with the highest numbers of pedestrian-motor vehicle crashes for the recent five-year period are shown in Table 3. The ten highest crash counties accounted for 55% of NC's reported pedestrian-motor vehicle crashes. Most of the counties below are highly urbanized. Thus, the high crash counties are, to a large extent, reflections of where people live in the State. However, the crash rates based on population do vary among the high crash frequency counties from a low of 1.9 per 10,000 residents (Forsyth Co.) to a high of 4.2 per 10,000 (Mecklenburg and New Hanover). The average is 3.5 / 10,000 residents for these ten counties. The county-level differences may reflect differences in amounts of walking by residents and visitors in the different counties, in addition to other exposure and risk factors.

[2] 2008 statewide population was estimated (September 17, 2009 update) at 5,099,708 municipal and 4,127,308 for unincorporated areas. Population estimates are from the Office of State Budget and Management, Municipal and Non-Municipal Population by County, retrieved from http://www.osbm.state.nc.us/ncosbm/facts_and_figures/socioeconomic_data/population_estimates/demog/ctotm08.htm

Table 3. Ten NC counties with highest numbers of pedestrian crashes from 2005 to 2009 and population-based crash rates.

County	5-Year Count	Percent of NC Total	2008 County Population est.	Average Yearly Ped. Crash Rate/10,000 Residents
Mecklenburg	1864	15	877,007	4.25
Wake	1301	10.5	864,429	3.01
Guilford	832	6.7	468,344	3.55
Cumberland	608	4.9	316,914	3.84
Durham	525	4.2	260,420	4.03
New Hanover	408	3.3	192,235	4.24
Buncombe	370	3	227,875	3.25
Gaston	341	2.7	204,971	3.33
Forsyth	324	2.6	343,704	1.89
Onslow	250	2	176,004	2.84
Total - 10 Counties	6823	54.9	3,931,903	3.47

The ten cities with the highest numbers of pedestrian-motor vehicle crashes during this five-year period are shown in Table 4. These ten cities together accounted for 43% of the State's 12,419 reported pedestrian crashes for this period. Among North Carolina cities, Charlotte accounts for 13.9% of statewide crashes over the past five years, followed by Raleigh (7.3%), Greensboro (4.6%), and Durham (4%). The cities and counties with the highest numbers of pedestrian crashes are generally those with the largest populations, although there is not an exact correlation as shown by the population-based crash rates in the right hand columns of Tables 3 and 4.

Other factors affecting the rate of crashes per population include the extent of walking by residents and visitors, traffic volumes, safety of roadways where pedestrians walk, and driver and pedestrian behaviors. The crash rate based on population averages 4.6 per 10,000 residents for these 10 cities compared with 3.7 for all urban/municipal areas of the State.

Table 4. Ten NC cities with highest numbers of pedestrian crashes from 2005-2009.

City	5-year count	Percent of NC Total	2008 City Population Est.	Avg. Yearly Ped. Crash Rate / 10000 residents
Charlotte	1729	13.9	683,541	5.06
Raleigh	912	7.3	377,353	4.83
Greensboro	567	4.6	263,268	4.31
Durham	491	4	228,480	4.30
Fayetteville	461	3.7	181,481	5.08
Wilmington	285	2.3	101,526	5.61
Asheville	273	2.2	78,313	6.97
Winston-Salem	235	1.9	228,362	2.06
Gastonia	211	1.7	74,518	5.66
High Point	195	1.6	100,645	3.88
Total – 10 Cities	5359	43.2	2,317,487	4.62

The crash fact descriptions that follow are also undoubtedly related to exposure, or when and where people choose to walk, who is walking (age, attitudes, and physical condition). Crash numbers can also change over time simply due to chance, due to changes in crash reporting procedures, due to weather or other factors such as economics that affect the amounts of walking and driving, and also as a result of safety-related factors including engineering, educational, and enforcement initiatives.

Pedestrian Characteristics

Pedestrian Age

It is difficult to draw firm conclusions about the year-to-year fluctuations in crash proportions by age across these five years (Table 5). (Note that the younger age categories span five years, while those beginning with age 31 span 10 years.) Crash involvement by age reflects both population numbers across the State and exposure or amount of walking among different age groups, among other risk factors.

Table 5. Pedestrian age group for those involved in crashes.

Pedestrian Age	2005	2006	2007	2008	2009	Total
0-5	117	99	93	99	70	478
	4.8[1]	4	3.6	4	2.9	3.9
6-10	95	109	86	103	98	491
	3.9	4.4	3.4	4.1	4.1	4
11-15	159	187	162	170	152	830
	6.6	7.5	6.3	6.8	6.3	6.7
16-20	240	287	290	302	287	1406
	9.9	11.5	11.3	12.1	11.9	11.4
21-25	269	273	275	275	288	1380
	11.1	11	10.7	11	12	11.2
26-30	200	207	246	197	222	1072
	8.3	8.3	9.6	7.9	9.2	8.7
31-40	434	377	381	396	365	1953
	17.9	15.1	14.9	15.9	15.2	15.8
41-50	384	422	453	433	377	2069
	15.9	16.9	17.7	17.4	15.7	16.7
51-60	260	267	270	295	301	1393
	10.7	10.7	10.5	11.8	12.5	11.3
61-70	89	110	142	117	130	588
	3.7	4.4	5.5	4.7	5.4	4.8
71+	174	152	162	107	116	711
	7.2	6.1	6.3	4.3	4.8	5.7
Total	2421	2490	2560	2494	2406	12371[3]
	19.6[2]	20.1	20.7	20.2	19.4	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first pedestrian in crash less any cases with missing pedestrian data.

Combining age categories into larger ranges gives a picture of the overall crash involvement by children, young adults, middle-aged adults, and older adults (Figure 4) and trends among these age ranges (Figure 5). Children up to age 16, on average, accounted for about 15% of pedestrian crash-involvement over this time period. Relatively speaking, teens and young adults between the ages of 16 and 30 account for a significant proportion of the pedestrian crashes (31%); middle aged adults account for 44% (remembering that this is a 30-year age span), and older adults 61 and up for 11%.

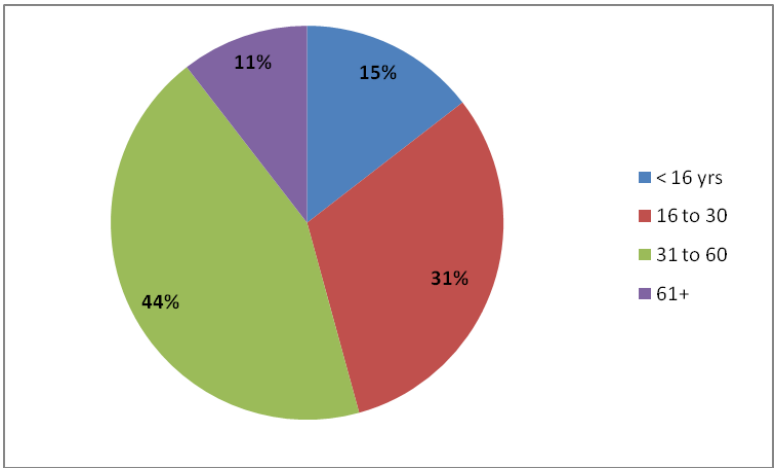

Figure 4 . Percentage of NC pedestrian crashes by pedestrian age range, 2005-2009.

The peak in pedestrian crash involvement by children under 16 over this period was 395 in 2006 (Figure 5). The peak for young adults (16 to 30) was 811 in 2007 and for middle-aged adults (31 to 60) was 1124 in 2008. The peak for older adults (61 years and up) was 304 in 2007.

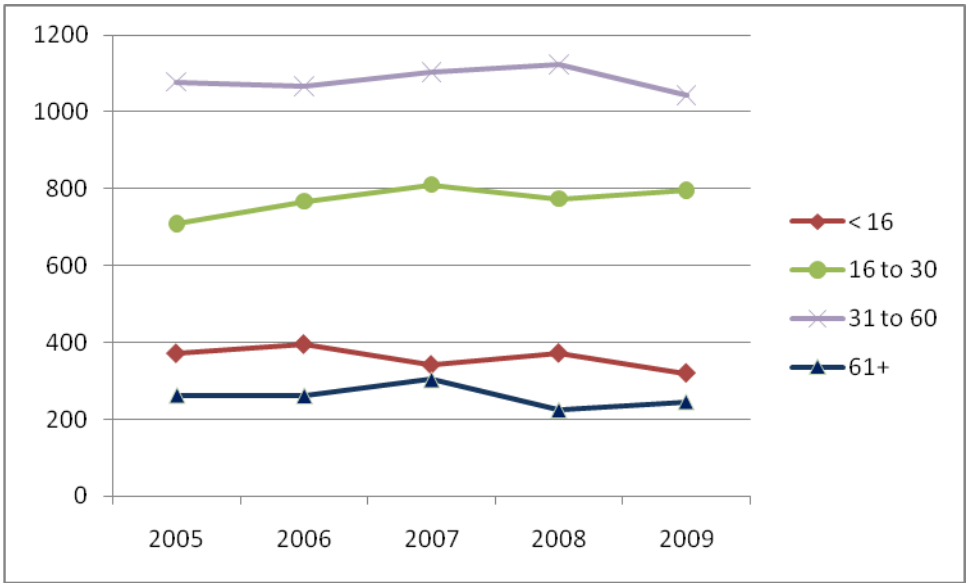

Figure 5. NC pedestrian crash involvement trends by children, young adults, middle-aged adults, and older adults.

Pedestrian Gender

On average, males accounted for about 61% of the pedestrians reported involved in crashes over this five year period. Females were involved in 39% of pedestrian crashes over this time period (Table 6). In the latest three years, females were involved at a slightly higher frequency and percentage than in the first two years.

Table 6. Pedestrian gender for those involved in crashes.

Pedestrian Sex	2005	2006	2007	2008	2009	Total
Female	933	919	1000	987	958	4797
	39.2[1]	37.7	39.6	39.7	40.1	39.3
Male	1446	1521	1524	1499	1429	7419
	60.8	62.3	60.4	60.3	59.9	60.7
Total	2379	2440	2524	2486	2387	12216[3]
	19.5 [2]	20	20.7	20.4	19.5	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first pedestrian in crash less any cases with missing pedestrian data.

Pedestrian Race/Ethnicity

Pedestrian crashes in North Carolina are most likely to involve pedestrians reported to be of White racial background (51%; Table 7). However, 39% of persons involved were reported to be Black/African-American. Considering that Blacks comprise about 22% of persons living in the State over this period, they are over-represented in pedestrian crashes based on population. These proportions may, however, reflect greater amounts of walking by Blacks as well as other exposure factors. Over this time period, those identified on crash report forms as Hispanic and persons of Asian descent have accounted for about 6% and around 1%, respectively, of pedestrians involved in crashes each year. Native Americans accounted for 1.4% of the total. Persons not identified in any of the other groups accounted for less than 1% of pedestrians involved in collisions.

Table 7. Pedestrian race/ethnicity for those involved in crashes.

Pedestrian Race	2005	2006	2007	2008	2009	Total
Asian	24	19	24	24	15	106
	1[1]	0.8	1	1	0.6	0.9
Black	942	948	967	948	936	4741
	40.3	39.4	38.7	38.7	39.7	39.3
Hispanic	174	136	170	158	136	774
	7.4	5.7	6.8	6.4	5.8	6.4
Native American	27	32	36	34	35	164
	1.2	1.3	1.4	1.4	1.5	1.4
Other	16	15	20	27	17	95
	0.7	0.6	0.8	1.1	0.7	0.8
White	1157	1257	1279	1260	1218	6171
	49.4	52.2	51.2	51.4	51.7	51.2
Total	2340	2407	2496	2451	2357	12051[3]
	19.4[2]	20	20.7	20.3	19.6	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first pedestrian in crash less any cases with missing pedestrian data

Pedestrian Injury Severity

Pedestrian crashes tend to be especially serious with 7% of pedestrians struck in North Carolina being killed on average, compared with about 0.3% fatalities for all crash-involved people (mostly drivers and passengers). An additional 9% suffered serious (A-type) injuries over the five years (crash-level injury numbers are shown in Figure 3). Based on 2009 national data, North Carolina was ranked 12th highest of U.S. states for pedestrian fatalities per capita (NHTSA Traffic Safety Facts 2009, early edition; available http://www-nrd.nhtsa.dot.gov/Pubs/811402EE.pdf, Table 116). [Note: NHTSA shows 7 fewer pedestrian fatalities in 2009 than the data compiled from North Carolina for these reports.]

Pedestrian Alcohol Use

The investigating officer indicated alcohol use by an average of about 13% of the pedestrians struck by motor vehicles over this five year period (Table 8). Suspected use does not necessarily imply that the pedestrian was impaired at the time of the crash, but that evidence of alcohol use was detected or suspected.

Table 8. Pedestrian use of alcohol.

Pedestrian Alcohol	2005	2006	2007	2008	2009	Total
No	2123	2206	2238	2194	2097	10858
	87.7[1]	88.7	87.4	87.2	86.5	87.5
Yes	298	282	322	322	326	1550
	12.3	11.3	12.6	12.8	13.5	12.5
Total	2421	2488	2560	2516	2423	12408[3]
	19.5[2]	20.1	20.6	20.3	19.5	100

[1]Row percent of column total
[2]Column percent of row total
[3]Total includes the first pedestrian in crash less any cases with missing pedestrian data

Driver and Vehicle Characteristics

Driver Age

There were year-to-year fluctuations in the distributions of driver age group involved in pedestrian crashes across the five years of data, but generally similar levels (Table 9). Younger drivers up to age 24 accounted for about 23% of collisions over this time period. However, the proportion of crashes involving these two younger age groups seems to be decreasing and both groups also saw fairly substantial decreases in their number of crashes in 2009. In general, adults of ages 50 and upwards may be accounting for a larger share of crashes (and possibly greater numbers), perhaps related to aging population trends.

Table 9. Age of drivers involved in crashes with pedestrians.

Driver Age	2005	2006	2007	2008	2009	Total
0-19	216	199	210	210	175	1,010
	11.0[1]	9.8	10.0	10.0	8.8	9.9
20-24	271	289	289	272	237	1,358
	13.8	14.3	13.7	12.9	11.9	13.3
25-29	231	219	218	224	239	1,131
	11.8	10.8	10.4	10.6	12.0	11.1
30-39	337	378	407	365	363	1,850
	17.2	18.7	19.3	17.3	18.2	18.1
40-49	354	357	344	382	320	1,757
	18.0	17.6	16.3	18.1	16.0	17.2
50-59	258	276	274	311	305	1,424
	13.1	13.6	13.0	14.7	15.3	14.0
60-69	156	160	195	200	199	910
	8.0	7.9	9.3	9.5	10.0	8.9
70+	139	147	168	145	158	757
	7.1	7.3	8.0	6.9	7.9	7.4
Total	1962	2025	2105	2109	1996	10,197[3]
	19.2[2]	19.9	20.6	20.7	19.6	

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first driver in crash less any cases missing driver age data (including for unidentified hit and run drivers).

Driver Gender

Male drivers accounted for 57% of the pedestrian-motor vehicle crashes over the five years, and female drivers about 43% (

Table 10). There is little year to year variability in these percentages, although female drivers showed a higher rate of involvement in 2007 and 2008.

Table 10. Gender of drivers involved in crashes with pedestrians.

Driver Sex	2005	2006	2007	2008	2009	Total
Male	1174	1205	1162	1156	1143	5840
	59.7[1]	59.5	55.2	54.6	57.1	57.2
Female	793	821	944	961	858	4377
	40.3	40.5	44.8	45.4	42.9	42.8
Total	1967	2026	2106	2117	2001	10217[3]
	19.3[2]	19.8	20.6	20.7	19.6	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first driver in crash less any cases missing driver data (including for unidentified hit and run drivers).

Driver Race/Ethnicity

White drivers were involved in about 60% and Black drivers 32% of the crashes with pedestrians (Table 11). Blacks have greater representation as pedestrians in collisions than as drivers, although they are over-represented as drivers based on population in the State. Hispanic drivers accounted for about 5% of collisions with pedestrians, and Asians and Native Americans about 1% each according to information from police crash-reports.

Table 11. Race/ Ethnicity of drivers involved in pedestrian crashes.

Driver Race	2005	2006	2007	2008	2009	Total
Asian	21	16	18	17	30	102
	1.1[1]	0.8	0.9	0.8	1.5	1
Black	601	644	657	723	630	3255
	30.7	32.1	31.4	34.4	31.7	32.1
Hispanic	120	104	119	87	78	508
	6.1	5.2	5.7	4.1	3.9	5
Native American	21	27	26	26	17	117
	1.1	1.3	1.2	1.2	0.9	1.2
Other	15	22	21	27	23	108
	0.8	1.1	1	1.3	1.2	1.1
White	1178	1192	1253	1222	1212	6057
	60.2	59.5	59.8	58.1	60.9	59.7
Total	1956	2005	2094	2102	1990	10147[3]
	19.3[2]	19.8	20.6	20.7	19.6	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first driver in crash less any cases missing driver data (including for unidentified hit and run drivers).

Driver Injury Severity

As would be expected, drivers are not often seriously injured in crashes with pedestrians, with 95% of drivers reported to receive no injuries, about 3% possibly receiving injuries, and another 2% receiving evident injuries (data not shown). However, there were eight reported driver fatalities associated with pedestrian collisions over this time period and another 14 possibly serious driver injuries (A-type).

Driver Alcohol Use

The investigating officer detected or suspected alcohol use by the drivers involved in pedestrian crashes in an average of about 5% of the crashes for all five years (Table 12). This means that the investigating police officer reported detecting alcohol; it does not necessarily imply intoxication.

Table 12. Alcohol use suspected for drivers involved in crashes with pedestrians.

Driver Alcohol	2005	2006	2007	2008	2009	Total
No	1934	2003	2072	2054	1974	10037
	95.9[1]	95.4	95.5	95.4	95.4	95.5
Yes	83	96	97	100	96	472
	4.1	4.6	4.5	4.6	4.6	4.5
Total	2017	2099	2169	2154	2070	10509[3]
	19.2[2]	20	20.6	20.5	19.7	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first driver per crash less any cases missing driver data (including for unidentified hit and run drivers).

Vehicle Type

Most vehicles involved in crashes with pedestrians are passenger vehicles, including cars, pickups, light trucks/mini vans, sport utility vehicles (SUVs), and vans, which together accounted for about 95% of collisions with pedestrians (Table 13). While passenger cars accounted for the majority (56%), pickups accounted for nearly 15% and SUVs for 16%, on average, with the latter percentage even higher for 2009. Vans and light trucks/mini-vans accounted for 8.5% of collisions.

Although accounting for smaller proportions, heavier vehicles tend to result in more severe injuries to pedestrians. School and activity buses have been involved in an average of about 7 crashes per year with pedestrians over the past five years. Commercial buses were involved in about 9 pedestrian collisions per year across the State. Commercial types of vehicles including vans, single unit trucks, taxicabs, heavy trucks, and emergency and other types of vehicles account for the remaining crashes with pedestrians. Six-wheel and larger trucks and tractors accounted for less than 3% of these collisions.

Table 13. Vehicle types involved in crashes with pedestrians.

Driver Vehicle Type	2005	2006	2007	2008	2009	Total
Passenger Car	1202	1224	1225	1234	1158	6043
	57.6[1]	56.9	54.4	55.1	54.5	55.7
Pickup	301	324	319	333	323	1600
	14.4	15	14.2	14.9	15.2	14.7
Light Truck (Mini-Van, Panel)	51	51	49	46	39	236
	2.4	2.4	2.2	2.1	1.8	2.2
Sport Utility	285	307	377	369	397	1735
	13.6	14.3	16.7	16.5	18.7	16
Van	123	127	165	138	135	688
	5.9	5.9	7.3	6.2	6.4	6.3
Commercial Bus	6	11	7	15	4	43
	0.3	0.5	0.3	0.7	0.2	0.4
School Bus	10	8	5	5	6	34
	0.5	0.4	0.2	0.2	0.3	0.3
Activity Bus	2	0	1	0	0	3
	0.1	0	0	0	0	0
Other Bus	2	3	3	1	2	11
	0.1	0.1	0.1	0	0.1	0.1
Single Unit Truck (2-Axle, 6-Tire)	28	27	23	31	14	123
	1.3	1.3	1	1.4	0.7	1.1
Single Unit Truck (3 Or More Axles)	5	11	5	7	2	30
	0.2	0.5	0.2	0.3	0.1	0.3
Truck/Trailer	4	6	12	8	5	35
	0.2	0.3	0.5	0.4	0.2	0.3
Truck/Tractor	0	1	1	1	1	4
	0	0	0	0	0	0
Tractor/Semi-Trailer	30	14	18	17	6	85
	1.4	0.7	0.8	0.8	0.3	0.8
Tractor/Doubles	1	0	0	1	2	4
	0	0	0	0	0.1	0
Unknown Heavy Truck	2	2	3	3	2	12
	0.1	0.1	0.1	0.1	0.1	0.1
Taxicab	5	7	6	10	2	30
	0.2	0.3	0.3	0.4	0.1	0.3
Motorcycle	19	11	9	6	14	59
	0.9	0.5	0.4	0.3	0.7	0.5
Pedestrian	0	0	0	0	2	2

Driver Vehicle Type	2005	2006	2007	2008	2009	Total
	0	0	0	0	0.1	0
Motor Home/Recreational Vehicle	2	1	2	5	6	16
	0.1	0	0.1	0.2	0.3	0.1
Other	1	1	0	1	0	3
	0	0	0	0	0	0
All Terrain Vehicle (ATV)	0	0	0	1	0	1
	0	0	0	0	0	0
Firetruck	0	2	0	0	0	2
	0	0.1	0	0	0	0
EMS Vehicle, Ambulance, Rescue Squad	2	0	6	0	0	8
	0.1	0	0.3	0	0	0.1
Police	7	15	15	9	4	50
	0.3	0.7	0.7	0.4	0.2	0.5
Total	2088	2153	2251	2241	2124	10857[3]
	19.2[2]	19.8	20.7	20.6	19.6	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total includes the first vehicle in crash less any cases missing vehicle data (including for unidentified hit and run vehicles).

Temporal and Environmental Factors

Month of Year

Monthly peaks vary from year to year, but for this five years period, the highest average numbers of pedestrian crashes have occurred in the fall months of October to December, when daylight periods are shorter (Figure 6).

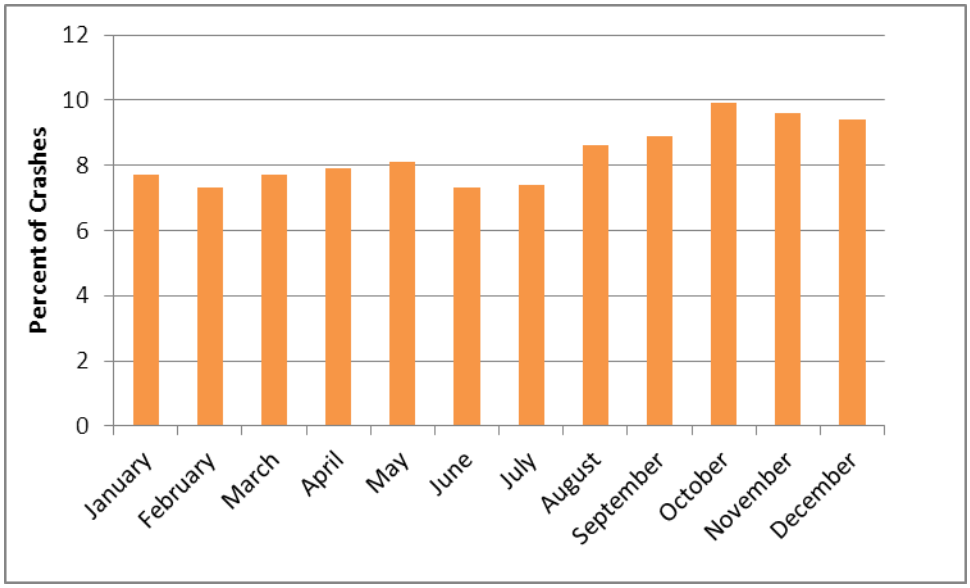

Figure 6. NC Pedestrian crashes by month of year, 2005-2009.

Day of the Week

The highest percentage of pedestrian crashes in NC were most likely to occur on a Friday on average, with the second highest percentage occurring on Saturdays. Pedestrian crashes were least likely to occur on a Sunday (Figure 7). Again, there is some variability, but these trends were fairly consistent from year to year.

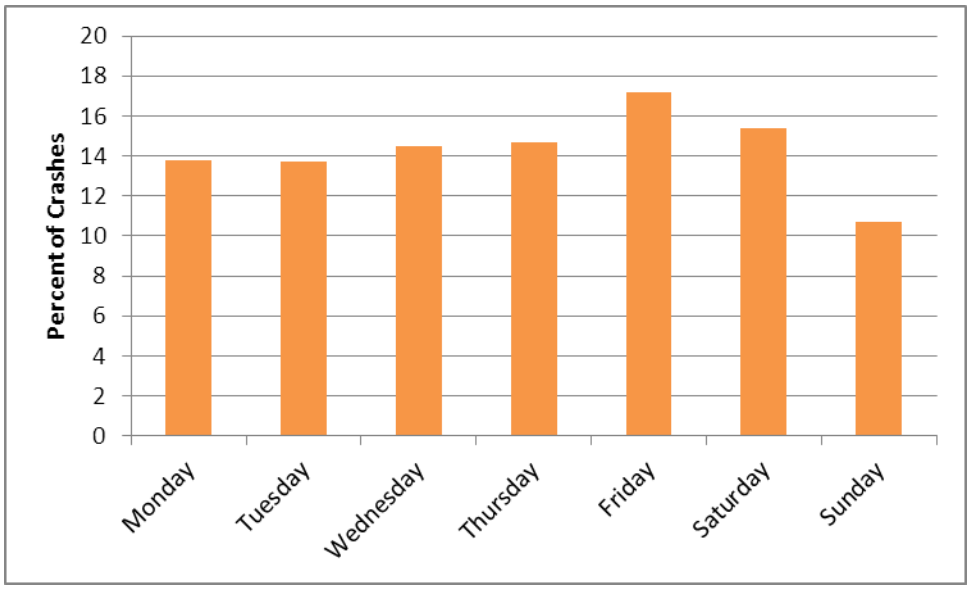

Figure 7. NC Pedestrian crashes by day of the week, 2005-2009.

Time of Day

Pedestrian crashes were most likely to occur in the afternoon and early evening between the hours of 3 to 6 p.m. and 6 to 9 p.m. (Figure 8). About 41% of pedestrian collisions occurred during these six hours. The third highest crash period was between noon to 3 p.m. (15%). There were also more pedestrian crashes between 9 p.m. and midnight than during peak morning travel time (6 to 9 a.m.) suggesting over-involvement of pedestrians in crashes at night; exposure data to test this hypothesis are, however, lacking. Nearly 7% of pedestrians were struck between midnight and 3 a.m, with 3% involved in during the hours between 3 and 6 a.m.

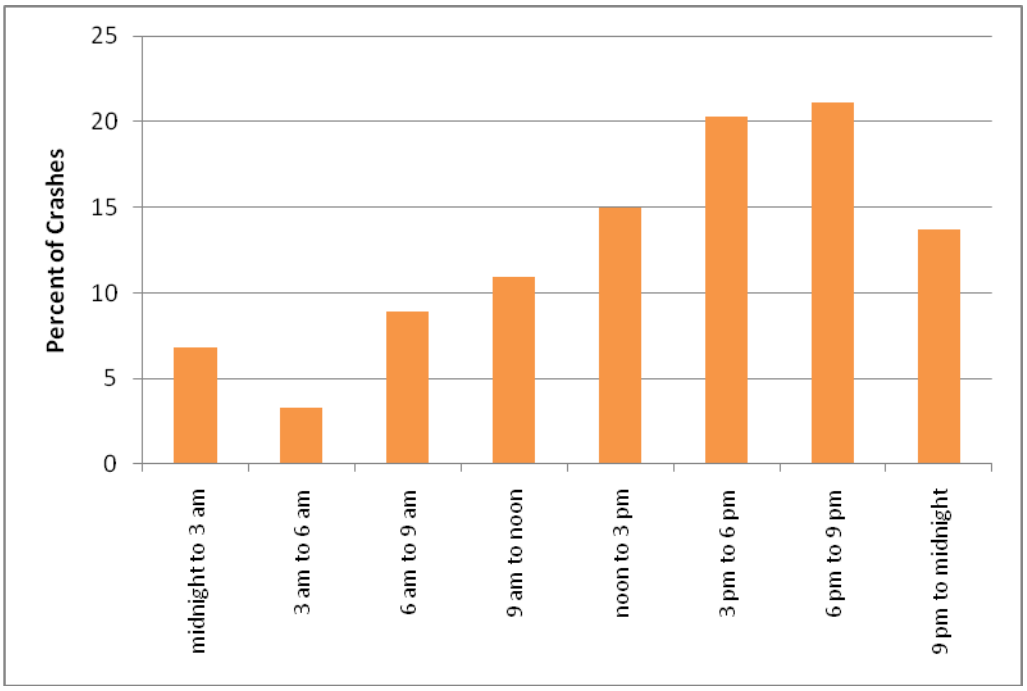

Figure 8. NC pedestrian crashes by time of day, 2005-2009.

Light Condition

While 56% of collisions occurred during daylight hours, over 43% of pedestrian crashes over the past five years have occurred during non-daylight conditions, including dawn and dusk. Twenty-one percent of crashes occurred at night on lighted roadways (typically urban roads) and 18% occurred at night on roadways indicated to have no supplemental lighting (Figure 9). Those struck at night on unlighted roadways were nearly three times more likely to be killed (nearly 19%) compared with those struck at night on lighted roadways (7%; data not shown). The increased rate of fatalities on non-lighted roadways likely reflects a number of factors including higher speeds associated with rural (unlighted) roads, and perhaps a decreased tendency for drivers to detect and slow before striking pedestrians on these roadways. Trends are fairly consistent across the five years of data, but there are slight year-to-year fluctuations.

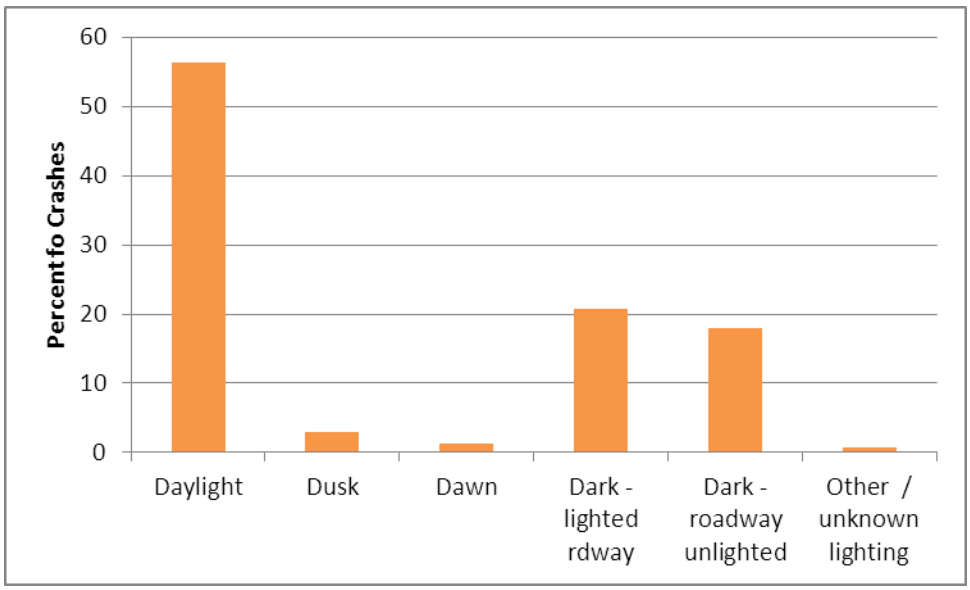

Figure 9. NC pedestrian crashes by light condition, 2005-2009.

Weather

The vast majority (92%) of pedestrian crashes occurred under clear (77%) or cloudy (not raining, 15%) weather conditions on average (Figure 10), no doubt reflecting exposure. Year-to-year variation in the number of crashes occurring under rainy, snowy/icy, or foggy/smoky conditions is also likely a reflection of exposure to these conditions (e.g., more pedestrian crashes under rainy or snowy conditions in years when the State received more snowfall).

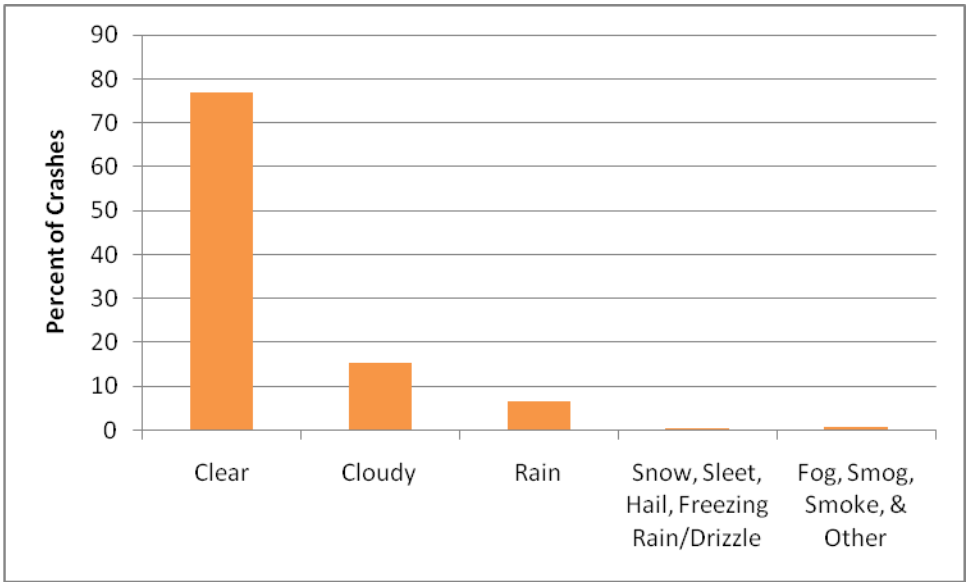

Figure 10. NC Pedestrian crashes by weather condition, 2005-2009.

Roadway Characteristics

Roadway Type

Nearly half (46%) of all pedestrian-motor vehicle crashes occurred on local (mostly city) streets reflecting higher levels of walking/numbers of pedestrians in cities and neighborhoods (Table 14). Around 27% of reported pedestrian crashes in this five year period occurred in parking lots, public driveways, or other public vehicular areas. Another 11% occurred along State Secondary routes. All other roadway classifications accounted for about 13% of the total, including around 5% on NC Routes, 6% on US Routes, and approximately 2% on Interstate Routes. Collisions on interstates often involve pedestrians associated with disabled vehicles or who were involved in a prior vehicle-to-vehicle collision. Collisions that occurred on private property were reported frequently enough to comprise about 3% of these crashes. There are also likely to be inaccuracies in these data with many crashes that occur within urban areas classified as on local streets although they are often NC, US or State Secondary routes.

Table 14. Pedestrian crashes by roadway classification.

Road Classification	2005	2006	2007	2008	2009	Total
Interstate	50	44	40	45	49	228
	2.1[1]	1.8	1.6	1.8	2	1.8
US Route	169	151	160	145	145	770
	7	6.1	6.3	5.8	6	6.2
NC Route	128	142	127	126	106	629
	5.3	5.7	5	5	4.4	5.1
State Secondary Route	308	300	300	276	237	1421
	12.7	12	11.7	11	9.8	11.4
Local Street	1095	1136	1194	1174	1108	5707
	45.2	45.6	46.6	46.6	45.6	46
Public Vehicular Area	603	647	649	686	705	3290
	24.9	26	25.4	27.2	29	26.5
Private Road, Driveway	68	70	90	67	79	374
	2.8	2.8	3.5	2.7	3.3	3
Total	2421	2490	2560	2519	2429	12419
	19.5[2]	20	20.6	20.3	19.6	100

[1] Row percent of column total
[2] Column percent of row total

Number of Through Lanes

Number of lanes indicated should reflect number of *through* lanes, excluding limited turn lanes and other non-continuing lanes. The table below excludes pedestrian crashes that occurred in parking lots and other non-roadway locations (Table 15). The majority (60%) of reported on-roadway pedestrian crashes occurred on two-lane roads (a consistent 59 - 60% year-to-year), while approximately 30% occurred on multi-lane roadways with four or more travel lanes. Three-lane roadways accounted for 6% and one-lane roads for 5%. There are year-to-year fluctuations in most categories, but it is difficult to discern any definite trends, although the proportion on 4-lane roads seems to be trending downwards.

The numbers of crashes reflect amounts of walking and driving on roadways with different numbers of lanes as well as other possible differences in risk exposure to crashes. There are also likely to be some inaccuracies in these data, with interpretation of numbers of lanes varying based on divided/undivided, presence of two-way turn lanes and other roadway characteristics.

Table 15. Pedestrian crashes by number of through traffic lanes.

Number of Lanes	2005	2006	2007	2008	2009	Total
1	84	81	91	103	120	479
	4.5[1]	4.2	4.5	5.3	6.4	5
2	1118	1133	1205	1153	1122	5731
	59.9	58.5	59.7	59.3	60	59.5
3	102	111	120	120	108	561
	5.5	5.7	5.9	6.2	5.8	5.8
4	288	341	321	286	257	1493
	15.4	17.6	15.9	14.7	13.8	15.5
5	159	152	150	166	161	788
	8.5	7.9	7.4	8.5	8.6	8.2
More than 5 Lanes	114	118	130	117	101	580
	6.1	6.1	6.4	6	5.4	6
Total	1865	1936	2017	1945	1869	9632[3]
	19.4[2]	20.1	20.9	20.2	19.4	100

[1] Row percent of column total
[2] Column percent of row total
[3] Total reflects only roadway crashes for which number of lanes is not missing.

Speed Limit

On average, two-thirds (67%) of NC's pedestrian crashes (that occurred on roadways with posted limits) took place on roads indicated to have speed limits of 35 mph or less, likely reflecting speeds on urban streets and commercial thoroughfares where more pedestrians tend to be found (Table 16). The 40 - 45 mph roadways account for about 18% of pedestrian collisions, and roadways of 50 mph and above 16%. While there is some variability in these percentages by year, no obvious trends have emerged. Although crashes on higher-speed roads (40 mph and upwards) are less frequent than those on lower-speed roads, crashes on higher speed roads may be especially severe. While less than 3% of those struck on roads with speed limits of 35 mph and lower were killed, the proportions killed were 12%, 21%, and 36% of those struck on 40 – 45 mph, 50 – 55 mph, and 60 – 75 mph roadways, respectively. In total, 70% of pedestrians killed were struck on roadways with speed limits of 40 mph and greater. (Note that we do not have good information on actual travel speeds of the striking vehicles, but the speed limit of the roadway provides some information about the general travel speed.)

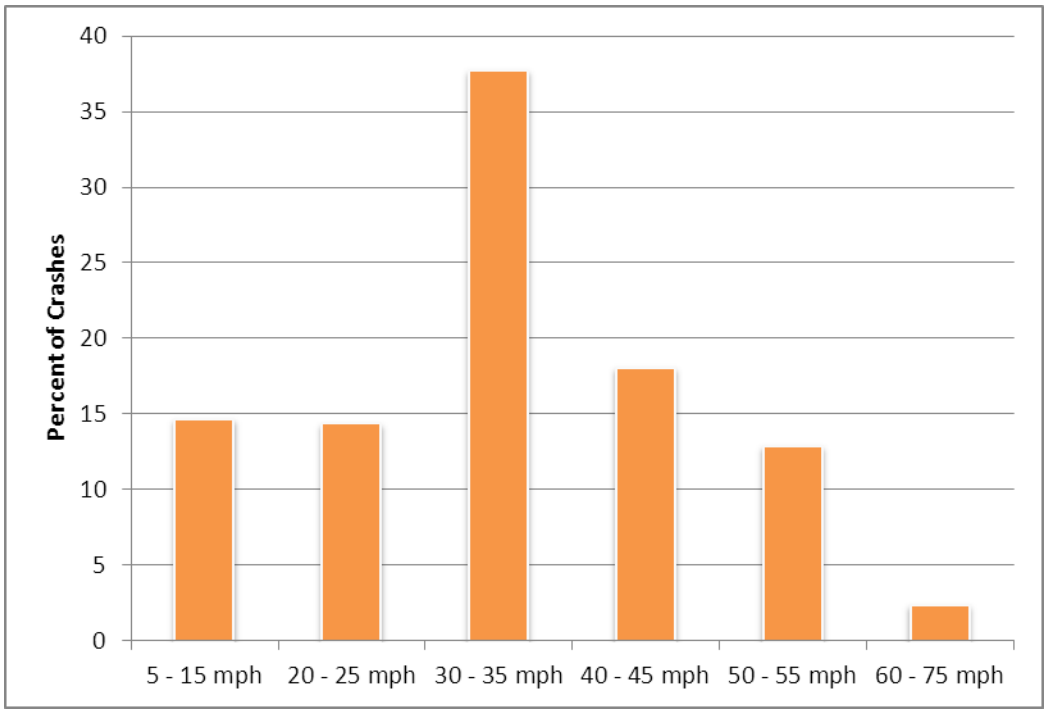

Figure 11. NC pedestrian crashes by posted speed limit of roadway.

For more information about pedestrian crashes in North Carolina and events leading up to the crashes, see the **North Carolina Pedestrian Crash Types, 2005-2009** summary report.